Patent claims: (68)

1. A method of receiving radio signals in a receiver (2) for a digital wireless communications system, the method comprising the steps of:

- level adjusting a received radio signal by an automatic gain control (12); and
- despreading the level adjusted signal in a RAKE unit (14) having a number of fingers, thus providing a number of despread data symbols, each despread data symbol being represented by a first number of bits,

characterized in that the method further comprises the step of

- truncating the despread data symbols provided from the RAKE unit (14) to obtain truncated data symbols represented by a second number of bits, said second number being smaller than said first number, wherein the second number of bits are selected as the least significant bits of the first number of bits representing a despread data symbol;
- saturating the truncated data symbols to obtain saturated data symbols by replacing a truncated data symbol with the highest value that can be represented by the second number of bits, if the value of the despread data symbol from which that truncated data symbol was obtained is larger than said highest value, and replacing a truncated data symbol with the lowest value that can be represented by the second number of bits, if the value of the despread data symbol from which that truncated data symbol was obtained is less than said lowest value; and
- level adjusting the despread data symbols provided from the RAKE unit (14) in dependence of said despread data symbols, so that overflow for the truncated data symbols is prevented.

2. A method according to claim 1, characterized in that said step of level adjusting the despread data symbols provided from the

RAKE unit (14) comprises the step of measuring the level of the despread data symbols.

3. A method according to claim 1, c h a r a c t e r i z e d in that said step of level adjusting the despread data symbols provided from the RAKE unit (14) comprises the step of measuring the level of the saturated data symbols.

4. A method according to any one of claims 1 to 3, c h a r a c t e r - i z e d in that said level adjusting of the despread data symbols is performed by adjusting a reference value of said automatic gain control (12).

5. A method according to any one of claims 1 to 3, c h a r a c t e r - i z e d in that said level adjusting of the despread data symbols is performed by adjusting the level of each despread data symbol individually in dependence of that despread data symbol.

6. A method according to any one of claims 1 to 5, c h a r a c t e r - i z e d in that said level adjusting is based on the largest of an inphase component and a quadrature component of said despread data symbols.

7. A method according to any one of claims 1 to 6, c h a r a c t e r - i z e d in that said level adjusting is based on data symbols averaged over time.

8. A method according to any one of claims 1 to 7, c h a r a c t e r - i z e d in that said level adjusting is performed by using a Proportional-Integral control algorithm.

9. A method according to any one of claims 1 to 8, c h a r a c t e r - i z e d in that said level adjusting is performed by selecting one of two different adjustment levels.

10. A receiver (2) for receiving radio signals in a digital wireless communications system, the receiver having means for:

- level adjusting a received radio signal by an automatic gain control (12); and
- despreading the level adjusted signal in a RAKE unit (14) having a number of fingers, thus providing a number of despread data symbols, each despread data symbol being represented by a first number of bits,

c h a r a c t e r i z e d in that the receiver further comprises means for

- truncating the despread data symbols provided from the RAKE unit (14) to obtain truncated data symbols represented by a second number of bits, said second number being smaller than said first number, wherein the second number of bits are selected as the least significant bits of the first number of bits representing a despread data symbol;
- saturating the truncated data symbols to obtain saturated data symbols by replacing a truncated data symbol with the highest value that can be represented by the second number of bits, if the value of the despread data symbol from which that truncated data symbol was obtained is larger than said highest value, and replacing a truncated data symbol with the lowest value that can be represented by the second number of bits, if the value of the despread data symbol from which that truncated data symbol was obtained is less than said lowest value; and
- level adjusting the despread data symbols provided from the RAKE unit (14) in dependence of said despread data symbols, so that overflow for the truncated data symbols is prevented.

11. A receiver according to claim 10, c h a r a c t e r i z e d in that it is adapted to adjust the level of the despread data symbols provided from the RAKE unit (14) by means of measuring the level of the despread data symbols.

12. A receiver according to claim 10, characterized in that it is adapted to adjust the level of the despread data symbols provided from the RAKE unit (14) by means of measuring the level of the saturated data symbols.

13. A receiver according to any one of claims 10 to 12, characterized in that it is adapted to adjust the level of the despread data symbols by adjusting a reference value of said automatic gain control (12).

14. A receiver according to any one of claims 10 to 12, characterized in that it is adapted to adjust the level of the despread data symbols by adjusting the level of each despread data symbol individually in dependence of that despread data symbol.

15. A receiver according to any one of claims 10 to 14, characterized in that it is adapted to base said level adjusting on the largest of an inphase component and a quadrature component of said despread data symbols.

16. A receiver according to any one of claims 10 to 15, characterized in that it is adapted to base said level adjusting on data symbols averaged over time.

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17. A receiver according to any one of claims ~~9 to 13~~, characterized in that it is adapted to perform said level adjusting by using a Proportional-Integral control algorithm.

18. A receiver according to any one of claims 10 to 17, characterized in that it is adapted to perform said level adjusting by selecting one of two different adjustment levels.

19. A receiver according to any one of claims 10 to 18, characterized in that the receiver is a WCDMA receiver.

20. A computer program comprising program code means for performing the steps of any one of the claims 1 to 9 when said computer program is run on a computer.

21. A computer readable medium having stored thereon program code means for performing the method of any one of the claims 1 to 9 when said program code means is run on a computer.